

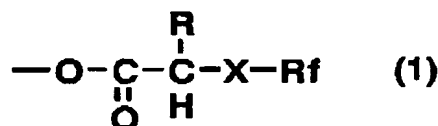
## CLAIMS

1. A fluorine-containing photocurable composition containing a (meth)acrylate having a fluorinated alkyl group (A) and a photopolymerization initiator (B); wherein

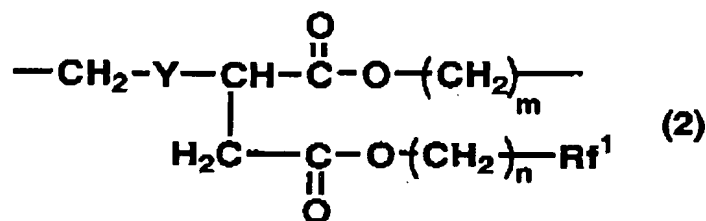
5 the (meth)acrylate (A) includes a functional group (A-i) represented by general formula (1) in which a fluorinated alkyl group is included at the terminal end thereof, and two or more (meth)acryloyl groups (A-ii), and

the fluorine atom content in one molecule of the (meth)acrylate (A) is 25% by weight or more, and molecular weight of the (meth)acrylate (A) is 500 to 4000,

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(in the general formula (1), R represents a hydrogen atom or alkyl group having 1 to 4 carbon atoms; X represents an alkylene chain, which may have a hetero atom, or a connecting group represented by the following general formula (2); and Rf represents a  
15 fluorinated alkyl group)



(in the formula (2), Y represents an oxygen atom or a sulfur atom; m and n are an integer  
20 of 1 to 4 which may be the same or different from each other; and Rf<sup>1</sup> is a fluorinated alkyl group).

2. The fluorine-containing photocurable composition according to claim 1, wherein X

in the general formula (1) is an alkylene chain represented by the following general formula (3),



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(in the general formula (3), Z represents  $-\text{NR}-\text{SO}_2-$  (R represents a hydrogen atom or alkyl group having 1 to 24 carbon atoms) or a sulfur atom, an oxygen atom, or nitrogen atom which has a hydrogen atom or alkyl group having 1 to 24 carbons; p represents an integer of 0 to 4; q represents 0 or 1; r represents an integer of 0 to 20; and  $1 \leq p+r$

10  $\leq 20$ ).

3. The fluorine-containing photocurable composition according to claim 1, wherein X in the general formula (1) is an alkylene chain represented by the general formula (3) (wherein Z represents  $-\text{NR}-\text{SO}_2-$  (R represents a hydrogen atom or alkyl group having 1 to 24 carbon atoms) or a sulfur atom an oxygen atom, or a nitrogen atom which has a hydrogen atom or alkyl group having 1 to 24 carbons; p represents 1; q represents 1; and r represents an integer of 0 to 19), or a connecting group represented by the general formula (2) (wherein  $\text{Rf}^1$  represents  $-\text{C}_n\text{F}_{2n+1}$  (n represents an integer of 1 to 20); and  $\text{Rf}$  in the general formula (1) represents  $-\text{C}_n\text{F}_{2n+1}$  (n represents an integer of 1 to 20) which may

20 be the same as or different from the  $\text{Rf}^1$ .

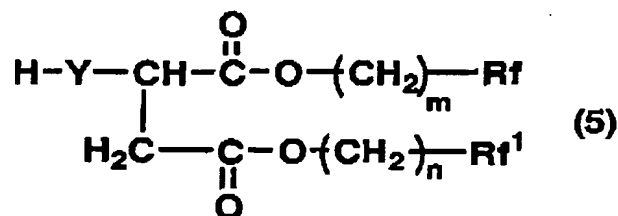
4. The fluorine-containing photocurable composition according to claim 3, wherein X in the general formula (1) is an alkylene chain represented by the general formula (3) (Z represents  $-\text{NR}-\text{SO}_2-$  (R represents an alkyl group having 1 to 6 carbon atoms), a sulfur atom or a nitrogen atom or a connecting group represented by the general formula (2) (Y represents a sulfur atom, and the carbon number n of  $\text{Rf}^1$  is 4, 6 or 8); and the carbon number n of  $\text{Rf}$  in the general formula (1) is 4, 6 or 8.

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5. The fluorine-containing photocurable composition according to claim 1, wherein the (meth)acrylate having a fluorinated alkyl group (A) is a compound which is obtained by reacting a compound (a1) containing three or more (meth)acryloyl groups with a compound represented by the general formula (4), or by reacting a compound (a1) containing three or more (meth)acryloyl groups with a compound (a2) represented by the general formula (5) such that the compound (a2) is used in an amount of 0.01 to (k-2) mole (wherein k represents the average number of (meth)acryloyl groups included in one molecule of the compound (a1) ) with respect to 1 mole of the compound (a1),



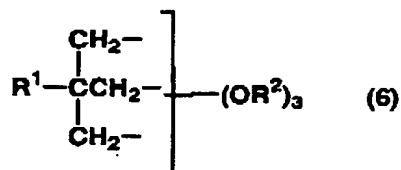
(in the general formula (4), r represents an integer of 0 to 20; Rf represents  $-\text{C}_n\text{F}_{2n+1}$  (n represents an integer of 1 to 20); and Z represents  $-\text{SO}_2-\text{NR}-$  (R represents a hydrogen atom or an alkyl group having 1 to 24 carbon atoms) or a sulfur atom, oxygen atom, or nitrogen atom which has a hydrogen atom or alkyl group having 1 to 24 carbon atoms)



(in the general formula (5), Y represents an oxygen atom or a sulfur atom; m and n are an integer of 1 to 4 which may be differ from or the same as each other; and Rf and Rf<sup>1</sup> represent  $-\text{C}_n\text{F}_{2n+1}$  (n represents an integer of 1 to 20.) which may be different from or the same as each other).

6. The fluorine-containing photocurable composition according to claim 5, wherein the compound (a2) is a compound represented by the general formula (4) (Z represents -SO<sub>2</sub>-NR- (R represents an alkyl group having 1 to 6 carbon atoms) or a sulfur atom, or nitrogen atom which has a hydrogen atom or alkyl group having 1 to 6 carbon atoms and carbon number n in R<sub>f</sub> is 4, 6, or 8), or a compound represented by the general formula (5) (Y represents a sulfur atom, and the carbon number n in R<sub>f</sub> and R<sub>f1</sub> is 4, 6, or 8).

7. The fluorine-containing photocurable composition according to claim 5 or 6, wherein the compound (a1) containing three or more (meth)acryloyl groups is at least one selected from the group consisting of: a compound (a1-1) represented by the general formula (6), a compound (a1-2) represented by the general formula (7), a urethane (meth)acrylate (a1-3), a cyanurate ring-containing tri(meth)acrylate (a1-4), and a phosphoric acid tri(meth)acrylate (a1-5),

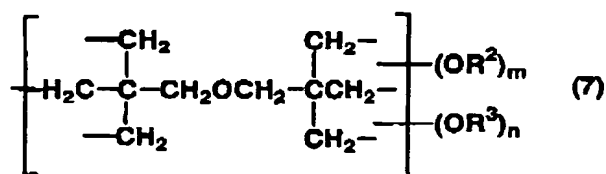


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(in the general formula (6), R<sup>1</sup> represents a hydroxyl group, an alkyl group having 1 to 24 carbon atoms, an alkyl carbonyloxy group having 1 to 24 carbon atoms, CH<sub>2</sub>=CHCO<sub>2</sub>CH<sub>2</sub>-, CH<sub>2</sub>=C(CH<sub>3</sub>)CO<sub>2</sub>CH<sub>2</sub>-, a (poly)oxyalkylene group, wherein the number of repeating units is one or more and terminal end thereof is blocked with a hydrogen atom or alkyl group having 1 to 18 carbon atoms, or an alkylol group having 1 to 12 carbon atoms; and R<sup>2</sup> represents an (meth)acryloyl group)

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(in the general formula,  $\text{R}^2$  represents a (meth)acryloyl group;  $\text{R}^3$  represents a hydrogen atom or alkyl carbonyl group having 1 to 18 carbon atoms;  $m$  represents an integer of 3 to 6;  $n$  represents an integer of 0 to 3; and  $m + n = 6$ ).

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8. The fluorine-containing photocurable composition according to claim 7, wherein the compound (a1) containing three or more (meth)acryloyl groups is a compound represented by the general formula (6) (wherein,  $\text{R}^1$  represents a straight chain alkyl group having 1 to 4 carbon atoms,  $\text{CH}_2=\text{CHCO}_2\text{CH}_2\text{---}$ ,  $\text{CH}_2=\text{C}(\text{CH}_3)\text{CO}_2\text{CH}_2\text{---}$ , or alkylol group having 1 to 3 carbon atoms), a compound represented by the general formula (7) (wherein,  $\text{R}^3$  represents a hydrogen atom or alkyl carbonyl group having 1 to 12 carbon atoms), or urethane (meth)acrylate which can be obtained by reacting a hydroxyl group-containing (meth)acrylate (x1) which has two or more (meth)acryloyl groups and an isocyanate compound (x2) which has an alicyclic structure.

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